

## Affective Disorders in the Elderly: the Risk of Sleep Disorders

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### ABSTRACT

The purpose of this study is to look at the relationship of sleep disorders to the incidence of affective disorders. In addition, assess whether the relationship remains significant after controlled variable bullies that also affect the occurrence of sleep disorders and or affective disorders in elderly. Observational study with unmatched case control study design. Individual population age 60 years or older, sampling probability proportional to size, consist of case group that is experiencing sleep disturbance (n = 165) and control group (n = 330). Respondent sleep disturbance affective disorder 23.6%. There is a significant relationship of sleep disorders to affective disorders. Sleep disorders at risk 2.47 times affective disorder. Sleep disorders can be insomnia, awakening at night or waking up too early which can lead to psychological disorders such as psychological disorders such as anger, unstable emotions, sadness, distress, anxiety is also a physical disorder such as pain in the body. If not immediately addressed can continue to occur depression and even threaten psychiatric disorders. Further research needs to be done to overcome sleep disorders in the elderly.

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## 1. INTRODUCTION

The success of health development can be seen from declining birth rates and improved health status. These changes have an impact on the increasing age of life expectancy so that the number of elderly people is also increasing. The world population of fifty and older is predicted to be 450 million by 2050 [1]. The Indonesian population aged 50 years or more is approximately 17 million people and is estimated to be 33 million by 2025. Among them is reported that elderly never formal education (58%), so that if they are still elderly they still have to work in untrained field [2], reported 36.59% of the population over the age of 60 who are still employed as laborers, operators and laborers [3].

The problem that often occurs in old age according to the biological theory of the aging process [4], is related to physical changes, decreased body function and psychological changes. This change occurs because of two factors: intrinsic (from the body) and extrinsic (from outside the body). The intrinsic factor that is biologically in the human body is a gene that regulates and determines aging process, whereas extrinsic factor is non-genetic factor in which there are four theories of free radical theory in environment, cross-link theory, immune theory, and physiology theory that combine intrinsic and extrinsic theories [2].

The theory of free radicals can affect the aging process while according to Cross-link theory says that collagen molecules and chemicals change the function of the network becomes stiff. In immune theory is explained by aging the imbalance of T cells producing antibodies, so that the immunity decreases [2]. Changes that occur due to aging process, in general some diseases begin to occur in the elderly, such as heart disease, kidney, diabetes, weakness in sex organs. The body weakens due to decreased muscular strength; the

ability of the stomach to process food is reduced, because the weakness of the anal muscle and urination sometimes in the elderly there is the removal of faeces or urine without control [5].

There are many types of sleep disorders, but which often occur in the elderly are insomnia or sleep time is reduced than usual, often awakened at night, woke up earlier and could not sleep again, as well as other issues related to psychosocial such as fear exposed to stroke, fear of dying at bedtime, and so forth [6]. The prevalence of insomnia in the elderly occurred 15-20%, while the breathing time stopped by 9% in the elderly men and 4% experienced by the elderly women. The factors that influence the sleep disorders are: physiological factors, cognitive factors and psychological factors. Stress due to loss such as separation, divorce, death, health and work are factors that support sleep disorders [7].

Factors that prolong sleep disturbances themselves are changed sleep habits and cognitive impairment [8]. Sleep disorders are not directly related to affective disorders. Affective disorders that occur such as anger, emotion, sadness, depression, anxiety, worry and so forth. Affective disorder if left continuously can lead to psychological disorders affective and the situation will worsen in the elderly [9]. Affective disorder is a psychic event of great tension and sudden, unnoticed and accompanied by great physical symptoms [10]. If this happens in the elderly it can be a serious thing, as this creates a pressure that will be related to physical health [11]. In general these events lead to depression in the elderly with a prevalence of 15-20% [12].

Factors that pose a risk of affect disorder are not fully known, but there are several supporting theories such as: psychological factors included psychodynamic, psychosocial, behavioral and cognitive factors, biological factors including genetic factors, neurotransmitters, endocrine and chronobiology [13]. Based on the pyramid, the population of OKU district shows population near aging population with male elderly population of 6.41% and female 7.04% [14], reported elderly in OKU district with health problems of 71.86% [15].

## 2. RESEARCH METHOD

This research is an observational research using unmatched case control study design with quantitative approach. The study was conducted in Baturaja Kabupaten Ogan Komering Ulu South Sumatra, the base of Baturaja city election because its heterogeneous population consisted of indigenous people and also population of arrivals with varying levels of education and economic status.

The population of the study was individuals aged 60 years and above, the sample in this study is composed of case groups ie individuals aged 60 years and over who suffered sleep disorders as much as 165 people while the control group are individuals who do not experience sleep disorders with a ratio of 1: 2 of 330 respondents. Sampling probability proportional to size (PPS) as the whole community in Baturaja is expected to be represented as sample. The study time is January 2017 until October 2017. The variables in this study include independent variables (ie sleep disturbances, dependent variables), affective disorders and confounding variables, ie sex, education, occupation, disability and history of the disease.

The instrument used in this study is a structured questionnaire that is translated from a global study on adult and elderly health by WHO-SAGE (Study on Global Aging and Adult Health) and INDEPTH (International Network for the Continuous Demographic Evaluation of Population and Their Health).

Data analysis used by stata were univariable analysis presented in frequency distribution table, Bivariable analyzes were performed on two variables suspected to be associated, ie between independent variables (sleep disorder) and dependent variable (affective disorder), and or dependent variable with confounding variables (sex, education, occupation, disability and disease history). Multivariable analysis was performed to find out the correlation of the independent variable with the dependent variable together by controlling the confounding variable. Statistical test used is logistic regression test with significance level of  $p < 0,05$  and value confidence interval 95%.

The research was conducted after the researcher got the ethical clearance license by Ogan Komering Ulu District Health Office, while the respondent stated that they were willing to be the subject of research after signing the informed consent.

## 3. RESULTS AND DISCUSSION

In the univariable analysis, there were 39 (23.6%) more affects than respondents in the control group, which was 30 (9.1%). In the case group men experienced less affective disorder of 75 (45.5%) than the control group of 108 (32.7%). In the case study, 24 cases of affective disorder 24 (14.5%), while the control group is 33 respondents (10%). Respondents working in the case group experienced affects disorder of 102 (61.8%) and in the control group as much as 135 (40.9%). Distribution of disability characteristic in case group with affective disorder was 114 (69.1%) compared to control group that was 186 (56.4%) while

distribution of respondent characteristic having history of disease was found in case group having disturbance affeks of 108 (61.8%) while in the control group as much as 150 (45.5%).

Bivariable analysis was done to find out the correlation of independent variable of sleep disorder with dependent variable of affection and external (sex, education, occupation, disability and disease history). Bivariable analyzes were also used to determine the extent of risk of affective disorder in the case group versus the control group. In this analysis we used chi-square test and odds ratio calculation with confidence interval (95%) and significance level  $p < 0.05$ . The result of bivariable analysis is found in Table 1.

Table 1. Analysis of sleep disorders, sex, education, occupation, disability, disease history with affected disorders

Variables	OR	95% CI
Sleep disorders		
No	3.09	1.14-8.50
Yes		
Sex		
Male	2.48	1.12- 5.73
Female		
Education		
High	1.53	0.49-4.49
Low		
Employment		
Yes	2.33	1.20-4.54
No		
Disability		
No	1.73	0.83-3.67
Yes		
Disease history		
No	1.94	0.96-3.98
Yes		

In Table 1, an analysis of the association of sleep disturbance with affective disorder was found; in the case group experienced 3 times more affective disorders than the control group and statistically significant (95% CI, 1.1-8.5). Analysis of male sex relationship showed that in case group experienced 2.5 times more affective disorder than control group and statistically significant (95% CI; 1.1-5.7). Bivariable analysis showed that the variables of education, disability and diseases were not statistically significant, while employment status and sex were found to be statistically significant.

Relationship of sleep disturbance with affection disorder after controlling of sex variables, education, occupation, disability and diseases history, analysis result showed case group had more 2.5 times affective disorder than control group and statistically significant (95% CI: 1.1 - 5.5). From the value of  $R^2$  it can be concluded that the variables of sex, education, occupation, disability, history of the disease only contributed eight percent in predicting affect disorder. The result of multivariable analysis can be seen in Table 2.

Table 2. Estimated odds ratio multivariable analysis sleep disorders with sex, education, employment, disability with affective disorders

Variables	OR	( 95 % CI)
Sleep Disorders		
Yes	2.47	(1.1 – 5.5)
No		
Sex		
Male	1.86	(1.8- 3.5)
Female		
Employment		
Yes	1.88	(0.9 – 3.7)
No		
n	495	

In this study the prevalence of affective disorders found in 51.11% and the largest occurred in women. The prevalence of depression by Stuart and Sudden occurring in old age is 15-20% [12], 20-40% of elderly individuals are depressed and women are 20-50% higher when compared with males [16]. Affect disorders found by researchers in this study can not be searched for the type of disorder, because the

limitations of the questionnaire researchers who are still examining the things that are very common related to affect disorders.

Affect disorders in old age occur because of hormonal changes that occur due to decreased brain weight that has been started since the age of thirty years by 10%, decreasing the brain in line with age, will lead to reduction and even stop the production of hormones not only estrogen but the whole system will affect aging process [4]. In a multivariable analysis that men had a risk of 2.48 times the occurrence of affect disorders. Sleep is regulated by the hypothalamus as a sleeping center, with the limbic system and the activation of the reticular system. The hypothalamus is consistently interrelated connected with the nervous system located under the hypothalamus [17].

Stress causes a person to become tense, also in an elderly individual anxious, depression will cause a slow down to sleep, REM sleep appears premature so eventually adds to total sleep but still feel sleep deprivation [18]. Stress in living life is the first risk factor for insomnia in the elderly [9], the second risk factor is a gender of 20-50% greater in females than in males, the third factor is insomnia itself and the last is a factor of health condition of the body [16].

Affect disorders that often occur in elderly individuals in the form of anxiety and mood disorders. When a person is free from anxiety he will be able to achieve adequate rest. Depressed aged individuals will find it difficult to meet their daily needs [19]. A troubled old age individual needs to be helped to solve the problems he faces, and is told to remain patient and diligent in solving the problems he faces [4]. Anxiety, dementia, depression and sensory impairment are psychosocial disorders associated with sleep disorders [20]. The direct relationship between sleep disturbance and depression is difficult to know, but when a person's sleep is less will cause mood changes and eventually develop into depression [16].

Sleep disturbance is also a symptom of depression and depression that just can cause sleep disorders ranging from most sleep to wake up. It is said that anxiety and stress are two things that cause insomnia. Hormonal changes & tension often make it difficult to sleep. Physiological changes in the body associated with anxiety are: shortness of breath, increased blood pressure and heart rate and muscle tension. The same is true of depression, that those who are anxious also have trouble sleeping and lack of sleep cause anxiety.

The limited ability of the reserve to respond to stress is also associated with the incidence of stress in an elderly man [2]. Anxiety and depression in the elderly should really be considered because it is a factor supporting the occurrence of a disease. An elderly person who is afraid of his old age will also experience feelings of anxiety, stress and depression [9]. If the elderly individuals are highly ambitious, anticipate the possibility of hypertension, diabetes mellitus, high cholesterol levels, so the chances of suffering a stroke and coronary heart rate become higher [4].

The prevalence of sleep disorders in this study amounted to 74.44% of the greatest incidence in women, this figure is still smaller which argues 67% of elderly have sleep disorders [21]. This figure is much greater when compared with WHO prevalence rate of 15-20% of elderly sleep disorders insomnia. Changes in sleep patterns occur along with the journey of one's life, with increasing age the quantity of sleep is reduced by 30-60 minutes per night, and sleep becomes intermittent [22]. Older women experience more sleep disturbances with waking forms at night or waking up too early [23].

Age gain has a small effect on the overall quantity of parental sleep, but has a significant impact between sleep quality and resting quality [20]. In the elderly the proportion of sleep in stages 3 and 4 becomes less efficient. Sleep disturbances during this time is less attention, because people already think it is not a problem [24]. This makes it difficult for us to find whether there is a sleep disorder in someone or not.

Complaints resulting from unqualified sleep are often unthinkable and people tend to associate with certain symptoms of illness, such as sleep apnoea complaints such as frequent urination at night, excessive fatigue during the day is associated with diabetes mellitus. In older women more often experience sleep disorders insomnia when compared to men. This happens because of differences in hormonal factors between men and women. Sex differences have a significant effect on the quality of sleep, where women are more likely to experience poor sleep quality [25].

Gender differences are not clearly found in sleep disorders, but women are said to have worse sleep quality compared to men. The results of this study found there is a positive relationship between sleep disturbances with affective disorders, meaning sleep disorders will increase the risk of affective disorders. Sleep quality is strongly associated with the occurrence of depression and anxiety [23],[26].

Poor sleep quality occurs in married people who experience anxiety, but if anxiety and depression can be overcome the disorder can be overcome. Other things related to sleep disorders and affective disorders are age, sex, education level, employment status, marital status, area, disability and history of disease ever suffered. Various diseases will arise when disturbed sleep needs, such as hypertension, heart swelling. Sleep disturbance as secondary to other diseases such as joint pain, osteoporosis, heart failure, Parkinson disease and depression [13]. Changes in sleep patterns occur with age, especially in individuals after age 60 [27], in old age quality sleep / sleep efficiency will decrease, decreased sleep requirement. Sleep disorders that often

occur in elderly individuals are difficult to sleep, often awaken or wake up too early [28]. Poor sleep quality is associated with comfort-related issues such as: loneliness, chronic pain, immune, metabolic and neuroendocrine functional disorders and chronic adrenal pituitary hypothalamus activation, during sleep processes the body filters out anxiety and worry, because poor quality sleep is more common in those who are worried. Eliminating sleep disorders can help eliminate depression in aging [16].

From the results of this study found that elderly men with low education 38.89% affective disorder and in women of 51.11% knowledge of a person related to education. Those with the necessary knowledge to understand the problems and health implications are relatively quiet compared to those who do not know [10]. Research [28] found that elderly women are at risk for depression. This happens because of the decrease in estrogen hormone. In older individuals the incidence is more frequent than those who are younger. Especially in postmenopausal women and post menopause sleep disorders that often occur is a sleep that is intermittent.

In this study, those with disabilities experienced affective disorders of 31.62% in males and 68.38% in females. Functional disability occurs in elderly individuals as a result of physiological changes [19]. Parental disability occurs due to two risk factors: unmodified risk factors: age, gender, genetics and modifiable risk factors: age associated with illness, disability, functional limitations, poor self defense strategies, lifestyle and behavior not healthy also includes social and environmental barriers, if these factors can be limited then the affective disorder can be limited also [8].

Anxiety and depression symptoms in elderly individuals will have a serious impact on their physical health, although research on this subject is lacking. Increased anxiety will increase the use of drugs that will lead to the occurrence of disease [29], anxiety and mood prevalence are low prevalence in older individuals when compared with younger individuals. Anger, anxiety and depression are associated with chronic diseases such as cardiovascular disease, diabetes and asthma [30]. Sleep disturbances in the form of waking at night are also associated with anxiety and depression, anxiety or mood disorders [31]. The elderly who was normal then experienced sleep disorders and affective disorders, it is necessary to think about possible disturbances, such as: whether the disorder has been experienced before, whether it is facing a very severe stressor, or whether the disturbance experienced is a reflection of physical disorders.

The thing that is often forgotten is all forms of disorder that occur in the elderly individuals is the use of drugs associated with illness suffered and unhealthy lifestyle [9], therefore what drugs are consumed and assessment of lifestyle of the elderly must be searched carefully. Illnesses such as chronic pain, metabolic disorders, disruption of neuroendocrine function occurring in these older ones will induce a sense of solitude and affect overall health [31], poverty also contributes to the incidence of sleep disorders in the elderly [32]. Increasing life expectancy both in men and women, the elderly become part of the community. In the future the existence of posyandu elderly will be very necessary especially when family members are increasingly busy with their respective affairs.

#### 4. CONCLUSION

Individuals aged 60 years and elderly who experience sleep disorders 2.47 times more affective disorders than individuals who do not experience sleep disorders. Need to increase promotion and preventive efforts at Integrated health care centers elderly and need to be formed supervisory and coaching team for sleep disorders in individuals aged 60 years and over does not continue to be a disorder affective.

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